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as a little friction or a pinch will bring the blood to the cheek and cause a rosy tint." Even the lay reader will find little difficulty in judging of the value of the analogy between the development of pigment in cells of petals and the response of human arteries to stimulation transmitted from the central nervous system.

It is hardly worth while to multiply instances of inaccurate and fanciful reasoning like the case just cited. Evidently Mr. Hervey is not versed in modern systematic botany or he would not say, "The Ranunculaceæ are placed first in order in our floras, we imagine for the reason that the flowers of this family are very simple in construction." If he is acquainted with the histology of the sepals and petals which he is discussing as regards their coloration, the fact does not appear in his pages. In short, he is not sufficiently equipped successfully to attack the very difficult problem of the nature and genesis of the colors of floral organs. If his labors should prove to be of use to the scientific investigator, it will be by his having collected and tabulated a considerable number of facts in regard to the distribution of color in flowers and the sequence of tints where there are progressive changes of coloration.

JOSEPH Y. BERGEN.

The Teaching Botanist.¹—To those who have kept in touch with the changing conditions of secondary education during the last decade, it has become most apparent that there has been a steadily growing demand that greater consideration should be given to the natural sciences. Very possibly the numerous summer schools maintained by the various colleges have served to cultivate and strengthen this tendency, if they were not directly responsible for it in the first instance; and the large number of teachers who annually take the time set apart for a much-needed rest to qualify themselves further in some special subject affords ample evidence, not only of the gathering force of the demand, but also of the seriousness of purpose which underlies it. In no subject has this movement gained greater headway than botany, and if evidence of this fact were needed, it might be found in the numerous text-books and laboratory guides which have appeared within recent years, all directed toward supplying working force to the teacher who is not a specialist, and who is usually compelled to divide his or her time among several subjects.

It has long been felt that some unification of method would be in

¹ *The Teaching Botanist*, a manual of information upon botanical instruction, together with outlines and directions for a comprehensive elementary course, by W. F. Ganong, Ph.D. New York, The Macmillan Company, 1899. 270 pp.

the highest degree desirable, though extremely difficult of realization. The very timely work by Dr. Ganong, however, promises to bring this ideal much nearer than heretofore. In *The Teaching Botanist* he has brought together in convenient form the best experience of our leading botanists as to the place which botany should occupy, and the best methods of presenting it with the greatest educational effect. It is in no sense a text-book, but it may be more appropriately called a "teacher's guide," occupying a field distinctly apart from the usual text-book.

After noting that botanical teaching is in a state of very rapid expansion and transition, and the unprecedented demand for a teaching that shall be more extensive, more thorough, and more representative of the present state of science, the author discusses *The Place of Botany in Education, What Botany is of most Worth, and Things Essential to Botanical Teaching* — chapters which are rich in suggestive thought and well merit the careful perusal of every conscientious and enterprising teacher. *Botanical Books and their Uses* adds much to the value of the work.

The second part is devoted to *The Principles of the Science of Botany*, in which is given an outline of a series of studies, illustrated by simple experiments which are well within the range of ordinary school work, and for which apparatus of a very simple and inexpensive kind will suffice.

The work marks a distinct advance in school methods and should be in the hands of every teacher.

D. P. P.

Massee's Plant Diseases.¹—In an introduction of fifty-three pages the author gives a short general account of fungi, the precautions to be used in preventing and combating diseases caused by them, and details concerning fungicides and spraying. The main part of the volume is devoted to descriptions of the principal diseases due to fungi in all parts of the world, giving the popular and scientific names, simple descriptions of the fungi and the effects they produce on the plants they attack, together with notes on the means of prevention as far as they are known. References are also given, to which the reader is directed for further information. The accounts of the special diseases follow the systematic order of the fungi which cause them, rather than the arrangement followed in some treatises where the

¹ Massee, George. *A Text-Book of Plant Diseases caused by Cryptogamic Parasites*. New York, The Macmillan Company, 1899. Small 8vo, xii + 458 pp., 92 figs.